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## NOTICE OF ALLOWANCE AND FEE(S) DUE

7590

08/26/2008

JOHN R. ROSS  
TREX ENTERPRISES  
10455 PACIFIC CENTER CT.  
SAN DIEGO, CA 92121

EXAMINER

YANG, NELSON C

ART UNIT

PAPER NUMBER

1641

DATE MAILED: 08/26/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,251	07/08/2003	Peter Martin	484	9476

TITLE OF INVENTION: OPTICAL SENSOR AND METHODS FOR MEASURING MOLECULAR BINDING INTERACTIONS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$720	\$300	\$0	\$1020	11/26/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

## HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to:** **Mail** **Mail Stop ISSUE FEE**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**or Fax** **(571)-273-2885**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

7590

08/26/2008

**JOHN R. ROSS**  
**TREX ENTERPRISES**  
**10455 PACIFIC CENTER CT.**  
**SAN DIEGO, CA 92121**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,251	07/08/2003	Peter Martin	484	9476

**TITLE OF INVENTION: OPTICAL SENSOR AND METHODS FOR MEASURING MOLECULAR BINDING INTERACTIONS**

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$720	\$300	\$0	\$1020	11/26/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
YANG, NELSON C	1641	435-287200

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_  
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_  
3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_  
Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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EXAMINER

YANG, NELSON C

ART UNIT

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## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 507 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 507 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

# Notice of Allowability

## Application No.

10/616,251

## Examiner

Nelson Yang

## Applicant(s)

MARTIN ET AL.

## Art Unit

1641

### - The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the response filed April 21, 2008.
2. ☒ The allowed claim(s) is/are 1-27, 29-34, 36-47, renumbered 1-45.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 4/21/08
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_.

/Nelson Yang/  
Patent Examiner, Art Unit 1641

## DETAILED ACTION

### *Election/Restrictions*

Claims 1-5, 7-17, 21-26, 29, 30, 38-47 are allowable. Claims 6, 18-20, and 27, previously withdrawn from consideration as a result of a restriction requirement, requires all the limitations of an allowable claim. Pursuant to the procedures set forth in MPEP § 821.04(a), **the restriction requirement between the different species of light sources, as set forth in the Office action mailed on June 15, 2006, is hereby withdrawn** and claims 6, 18-20, and 27 are hereby rejoined and fully examined for patentability under 37 CFR 1.104. In view of the withdrawal of the restriction requirement, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Claims 1-5, 7-17, 21-26, 29, 30, 38-47 are directed to an allowable product. Pursuant to the procedures set forth in MPEP § 821.04(B), claims 31-37, directed to the process of making or using an allowable product, previously withdrawn from consideration as a result of a restriction requirement, are hereby rejoined and fully examined for patentability under 37 CFR 1.104.

Because all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, **the restriction requirement as set forth in the Office action mailed on July 15, 2006 is hereby withdrawn**. In view of the withdrawal of the restriction requirement as to the

rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

#### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with John Ross on August 11, 2008. Support for the amendments can be found on p.23-26 of the specification.

Please amend the Brief Description of the Drawings in the specification as follows:

On p. 4, line 21, please change FIGS. 6A&B to FIGS. 6A-C.

On p. 4, line 24, please change FIG. 9 to FIG. 9A-F.

On p. 5, line 6, please change FIG. 15 to FIGS. 15A and 15B

Please cancel claim 35, and amend claims 1, 31, 38, 41, and 42 as follows:

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1. An optical sensor for monitoring molecular binding interactions, said sensor comprising:

- A) at least one porous silicon region comprising more than 1000 pores, each pore having a nominal width and a nominal depth at least 10 times larger than said nominal width, with the depth of each pore being approximately equal to the depth of at least most other pores in said porous silicon region, said porous silicon region defining a top surface and a bottom surface, and said bottom surface being parallel or approximately parallel to said top surface;
- B) at least one buffer-sample fluid flow channel located above said at least one porous silicon region providing a fluid flow passage across said porous silicon region;
- C) at least one light source for illuminating said at least one porous silicon region;
- D) at least one interference monitor adapted to monitor interference patterns caused by interference of light reflected from said top surface with light reflected from said bottom surface of said at least one porous silicon region, said interference monitor comprising a deep well linear photodiode array of pixels, each pixel having a photoelectron full well capacity of about 156 million photoelectrons or more, and having a frame rate of about one hundred or more frames of interference fringe data per second;
- E) a fluid flow control system for producing controlled flow of buffer solutions, ligand containing solutions, and analyte containing solutions through said at least one fluid flow channel; and
- F) a computer processor programmed with a computer program ~~for making~~ causing said processor to execute molecular binding measurements based on changes in the interference patterns monitored by the at least one interference monitor while analytes bind with and disassociate from ligands attached to surfaces of said pores, said computer program comprising

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~~a special correlation method~~ executable instructions for calculating optical path differences in measured interference fringe patterns wherein the measured fringe patterns is that are correlated to a test fringe pattern, wherein the test fringe pattern varies sinusoidally as a function of optical path differences divided by the wavelength of said light.

31. A method for measuring molecular binding interactions, utilizing an optical sensor comprising: having:

- a) at least one porous silicon region comprising more than 1000 pores, each pore having a nominal width and a nominal depth at least 10 times larger than said nominal width, with the depth of each pore being approximately equal to the depth of at least most other pores in said porous silicon region, said porous silicon region defining a top surface and a bottom surface, and said bottom surface being parallel or approximately parallel to said top surface;
- b) at least one buffer-sample fluid flow channel located above said at least one porous silicon region providing a fluid flow passage across said porous silicon region;
- c) at least one light source for illuminating said at least one porous silicon region;
- d) at least one spectral interference monitor for adapted to monitoring interference fringe patterns caused by interference of light reflected from said top surface with light reflected from and said bottom surface of said at least one porous silicon region, said interference monitor comprising a deep well linear photodiode array of pixels, each pixel having a photoelectron full well capacity of about 156 million photoelectrons or more, and having a frame rate of about one hundred or more frames of interference fringe data per second;



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e) a fluid flow control system for producing controlled flow of buffer solutions, ligand containing solutions, and analyte containing solutions through said at least one fluid flow channel; and

f) a computer processor programmed with a computer program ~~for making~~ causing said ~~processor to execute~~ kinetic binding measurements based on changes in the spectral interference patterns monitored by the at least one interference monitor while analytes bind with and disassociate from ligands attached to surfaces of said pores, said computer program comprising ~~a special correlation method~~ executable instructions for calculating optical path differences in measured interference fringe patterns ~~monitored by said at least one spectral monitor while analytes bind with and disassociate from ligands attached to surfaces of said pores that are~~ correlated the measured interference fringe patterns to a test fringe pattern, wherein the test fringe pattern varies sinusoidally as a function of optical path differences divided by the wavelength of said light. wherein said method comprises:

A) immobilizing ligand molecules within said pores;

B) causing a solution containing analyte molecules to flow across said porous silicon region to permit analyte molecules to diffuse close to and become bound at least temporarily ~~by~~ to said ligand molecules to form interference fringe patterns;

C) illuminating at least a portion of said porous silicon region so as to produce reflections from said bottom surface and said top surface; and

D) monitoring changes in ~~spectral~~ interference fringe patterns produced by light reflected from said top and bottom surfaces in order to obtain information concerning binding reactions between said ligand and said analyte.

38. An optical sensor for monitoring molecular binding interactions, said sensor comprising:

- A) at least one porous silicon region comprising more than 1000 pores, each pore having a nominal width and a nominal depth at least 10 times larger than said nominal width, with the depth of each pore being approximately equal to the depth of at least most other pores in said porous silicon region, said porous silicon region defining a top surface and a bottom surface, and said bottom surface being parallel or approximately parallel to said top surface;
- B) at least one buffer-sample fluid flow channel located above said at least one porous silicon region providing a fluid flow passage across said porous silicon region;
- C) at least one light source for illuminating said at least one porous silicon region;
- D) at least one interference monitor adapted to monitor interference patterns caused by interference of light reflected from said top surface with light reflected from said bottom surface of said at least one porous silicon region, said interference monitor comprising a deep well linear photodiode array of pixels, each pixel having a photoelectron full well capacity of about 156 million photoelectrons or more, and having a frame rate of about one hundred or more frames of interference fringe data per second;
- E) a fluid flow control system for producing controlled flow of buffer solutions, ligand containing solutions, and analyte containing solutions through said at least one fluid flow channel; and
- F) a processor means programmed with a computer program ~~for making~~ causing said processor means to execute kinetic molecular binding measurements based on changes in the interference patterns monitored by the at least one interference monitor while analytes bind with and

disassociate from ligands attached to surfaces of said pores, said computer program comprising ~~a special correlation method~~ executable instructions for calculating optical path differences in measured interference fringe patterns ~~calculation of optical path differences from measured interference fringe patterns wherein each measured fringe pattern is~~ that are correlated to a test fringe pattern, wherein the test fringe pattern varies sinusoidally as a function of optical path differences divided by the wavelength of said light.

41. An optical sensor for monitoring molecular binding interactions, said sensor comprising:

- A) at least one porous silicon region, said porous silicon region defining a top surface and a bottom surface, and said bottom surface being parallel or approximately parallel to said top surface;
- B) at least one buffer-sample fluid flow channel located above said at least one porous silicon region providing a fluid flow passage across said porous silicon region;
- C) at least one light source for illuminating said at least one porous silicon region;
- D) at least one interference monitor adapted to monitor interference patterns caused by interference of light reflected from said top surface with light reflected from said bottom surface of said at least one porous silicon region, said interference monitor comprising a deep well linear photodiode array of pixels, each pixel having a photoelectron full well capacity of about 156 million photoelectrons or more, and having a frame rate of about one hundred or more frames of interference fringe data per second;

E) a fluid flow control system for producing controlled flow of buffer solutions, ligand containing solutions, and analyte containing solutions through said at least one fluid flow channel; and

F) a computer processor programmed with a computer program ~~for making~~ causing said processor to execute molecular binding measurements based on changes in the interference patterns monitored by the at least one interference monitor while analytes bind with and disassociate from ligands attached to surfaces of said pores, said computer program comprising ~~a special correlation method~~ executable instructions for calculating optical path differences in measured interference fringe patterns ~~calculation of optical path differences from measured interference fringe patterns wherein each measured fringe pattern is that are~~ correlated to a test fringe pattern, wherein the test fringe pattern varies sinusoidally as a function of optical path differences divided by the wavelength of said light.

42. An optical sensor for monitoring molecular binding interactions, said sensor comprising:

- A) at least one porous silicon region comprising more than 1,000 pores, each pore having a nominal width and a nominal depth at least 10 times larger than said nominal width, with the depth of each pore being approximately equal to the depth of at least most other pores in said porous silicon region, said porous silicon region defining a top surface and a bottom surface, and said bottom surface being parallel or approximately parallel to said top surface;
- B) at least one buffer-sample fluid flow channel located above said at least one porous silicon region providing a fluid flow passage across said porous silicon region;
- C) at least one light source for illuminating said at least one porous silicon region;

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D) at least one interference monitor adapted to monitor interference patterns caused by interference of light reflected from said top surface with light reflected from said bottom surface of said at least one porous silicon region, said interference monitor comprising a deep well linear photodiode array of pixels, each pixel having a photoelectron full well capacity of about 156 million photoelectrons or more, and having a frame rate of about one hundred or more frames of interference fringe data per second;

E) a fluid flow control system for producing controlled flow of buffer solutions, ligand containing solutions, and analyte containing solutions through said at least one fluid flow channel; and

F) a computer processor programmed with a computer program ~~for making~~ causing said processor to execute molecular concentration measurements based on changes in the interference patterns monitored by the at least one interference monitor while analytes bind with and disassociate from ligands attached to surfaces of said pores, said computer program comprising ~~a special correlation method~~ executable instructions for calculating optical path differences in measured interference fringe patterns ~~calculation of optical path differences from measured interference fringe patterns wherein each measured fringe pattern is~~ that are correlated to a test fringe pattern, wherein the test fringe pattern varies sinusoidally as a function of optical path differences divided by the wavelength of said light.

The following is an examiner's statement of reasons for allowance: the prior art fails to teach a test fringe pattern that varies sinusoidally as a function of optical path differences divided by the wavelength of the light.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson Yang whose telephone number is (571)272-0826. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long V. Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nelson Yang/  
Patent Examiner, Art Unit 1641